

Table F-8. WQBEL Calculations for Selenium

	Acute	Chronic
Criteria (mg/L) ⁽¹⁾	20	5
Dilution Credit	No dilution	No dilution
ECA	20	5
ECA Multiplier	0.19	0.34
LTA	4	2
AMEL Multiplier (95 th %)	(2)	2.04
AMEL (mg/L)	(2)	3.5
MDEL Multiplier (99 th %)	(2)	5.35
MDEL (mg/L)	(2)	9.2

⁽¹⁾ California Department of Fish and Game Water Quality Criteria

⁽²⁾ Limitations based on acute LTA (Acute LTA > chronic LTA)

**Summary of Water Quality-based Effluent Limitations
Discharge Point No. 001 and No. 002**

Table F-9. Summary of Water Quality-based Effluent Limitations

Parameter	Units	Effluent Limitations				
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
Ammonia (as N)	mg/L	0.74	--	1.5	--	--
1 May – 31 October	lbs/day ¹	22	--	46	--	--
Ammonia (as N)	mg/L	1.11	--	2.14	--	--
1 November – 30 April	lbs/day ¹	33	--	64	--	--
Aluminum (total)	µg/L	276	200 ³	750	--	--
Cyanide	µg/L	4.3	--	8.5	--	--
Nitrate + Nitrite (as N)	mg/L	10	--	--	--	--
	lbs/day	300 ¹	--	--	--	--
Selenium (total)	µg/L	3.5	--	9.2	--	--
	lbs/day	0.11 ¹	--	0.28 ¹	--	--
Mercury (Total Recoverable)	lbs/year	0.1 ¹	--	--	--	--
Acute Toxicity ⁴	%	--	--	--	--	--
Chronic Toxicity ⁹	--	--	--	--	--	--
Total Residual Chlorine ⁸	mg/l	0.01 ⁵	--	0.02 ⁶	--	--
Total Coliform Organisms	MPN	--	2.2	23 ⁷	--	240

¹ Based on a maximum permitted flow of 3.6 mgd.

² The average monthly percent removal of BOD 5-day 20°C and total suspended solids shall not be less than 85 percent.

³ Annual average.

⁴ Survival of aquatic organisms is 96-hour bioassays of undiluted waste shall be no less than:

Minimum for any one bioassay-----70%

Median for any three or more consecutive bioassays-----90%

⁵ 4-day average.

⁶ 1-hour average.

⁷ Not to exceed 23 MPN more than once in a 30-day period.

⁸ Total chlorine residual must be monitored with a method sensitive to and accurate at the permitted level of 0.01 mg/L..

⁹ The effluent shall not cause or contribute to chronic toxicity in the receiving water.

5. Whole Effluent Toxicity (WET)

For compliance with the Basin Plan's narrative toxicity objective, this Order requires the Discharger to conduct whole effluent toxicity testing for acute and chronic toxicity, as specified in the Monitoring and Reporting Program (Attachment E, Section V.). This Order also contains effluent limitations for acute toxicity and requires the Discharger to implement best management practices to investigate the causes of, and identify corrective actions to reduce or eliminate effluent toxicity.

- a. **Acute Aquatic Toxicity.** The Basin Plan contains a narrative toxicity objective that states, *"All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life."* (Basin Plan at III-8.00) The Basin Plan also states that, *"...effluent limits based upon acute biotoxicity tests of effluents will be prescribed where appropriate..."*. USEPA Region 9 provided guidance for the development of acute toxicity effluent limitations in the absence of numeric water quality objectives for toxicity in its document titled "Guidance for NPDES Permit Issuance", dated February 1994. In section B.2. "Toxicity Requirements" (pgs. 14-15) it states that, *"In the absence of specific numeric water quality objectives for acute and chronic toxicity, the narrative criterion 'no toxics in toxic amounts' applies. Achievement of the narrative criterion, as applied herein, means that ambient waters shall not demonstrate for acute toxicity: 1) less than 90% survival, 50% of the time, based on the monthly median, or 2) less than 70% survival, 10% of the time, based on any monthly median. For chronic toxicity, ambient waters shall not demonstrate a test result of greater than 1 TUc."* Accordingly, effluent limitations for acute toxicity have been included in this Order as follows:

Acute Toxicity. Survival of aquatic organisms in 96-hour bioassays of undiluted waste shall be no less than:

Minimum for any one bioassays -----	70%
Median for any three or more consecutive bioassays -----	90%

- b. **Chronic Aquatic Toxicity.** Based on quarterly whole effluent chronic toxicity testing performed by the Discharger from 18 October 2002 through 10 July 2007, the discharge has reasonable potential to cause or contribute to an in-stream excursion above of the Basin Plan's narrative toxicity objective.

A narrative effluent limit does not allow the effluent limit to cause or contribute to chronic toxicity in the receiving water.

Numeric chronic WET effluent limitations have not been included in this order. The SIP contains implementation gaps regarding the appropriate form and implementation of chronic toxicity limits. This has resulted in the petitioning of a

NPDES permit in the Los Angeles Region³ that contained numeric chronic toxicity effluent limitations. To address the petition, the State Water Board adopted WQO 2003-012 directing its staff to revise the toxicity control provisions in the SIP. The State Water Board states the following in WQO 2003-012, *"In reviewing this petition and receiving comments from numerous interested persons on the propriety of including numeric effluent limitations for chronic toxicity in NPDES permits for publicly-owned treatment works that discharge to inland waters, we have determined that this issue should be considered in a regulatory setting, in order to allow for full public discussion and deliberation. We intend to modify the SIP to specifically address the issue. We anticipate that review will occur within the next year. We therefore decline to make a determination here regarding the propriety of the final numeric effluent limitations for chronic toxicity contained in these permits."* The process to revise the SIP is currently underway. Proposed changes include clarifying the appropriate form of effluent toxicity limits in NPDES permits and general expansion and standardization of toxicity control implementation related to the NPDES permitting process. Since the toxicity control provisions in the SIP are under revision it is infeasible to develop numeric effluent limitations for chronic toxicity. Therefore, this Order includes a narrative chronic toxicity effluent limitation.

In addition, the Discharger is required to conduct chronic whole effluent toxicity testing, as specified in the Monitoring and Reporting Program (Attachment E, Section V.) and Special Provisions VI.C.2.a. of this Order requires the Discharger to investigate the causes of, and identify and implement corrective actions to reduce or eliminate effluent toxicity. If the discharge demonstrates a pattern of toxicity exceeding the numeric toxicity monitoring trigger, the Discharger is required to initiate a Toxicity Reduction Evaluation (TRE), in accordance with an approved TRE work plan. The numeric toxicity monitoring trigger is not an effluent limitation, it is the toxicity threshold at which the Discharger is required to perform accelerated chronic toxicity monitoring, as well as, the threshold to initiate a TRE if a pattern of effluent toxicity has been demonstrated.

D. Final Effluent Limitations

1. Mass-based Effluent Limitations.

Title 40 CFR 122.45(f)(1) requires effluent limitations be expressed in terms of mass, with some exceptions, and 40 CFR 122.45(f)(2) allows pollutants that are limited in terms of mass to additionally be limited in terms of other units of measurement. This Order includes effluent limitations expressed in terms of mass and concentration. In addition, pursuant to the exceptions to mass limitations provided in 40 CFR

³ In the Matter of the Review of Own Motion of Waste Discharge Requirements Order Nos. R4-2002-0121 [NPDES No. CA0054011] and R4-2002-0123 [NPDES NO. CA0055119] and Time Schedule Order Nos. R4-2002-0122 and R4-2002-0124 for Los Coyotes and Long Beach Wastewater Reclamation Plants Issued by the California Regional Water Quality Control Board, Los Angeles Region SWRCB/OCC FILES A-1496 AND 1496(a)

122.45(f)(1), some effluent limitations are not expressed in terms of mass, such as pH and temperature, and when the applicable standards are expressed in terms of concentration (e.g. CTR criteria and MCLs) and mass limitations are not necessary to protect the beneficial uses of the receiving water.

Mass-based effluent limitations were calculated based upon the permitted average dry weather flow allowed in Section IV.A.1.i of the Limitations and Discharge Requirements.

2. Averaging Periods for Effluent Limitations.

Title 40 CFR 122.45 (d) requires average weekly and average monthly discharge limitations for publicly owned treatment works (POTWs) unless impracticable. However, for toxic pollutants and pollutant parameters in water quality permitting, the US EPA recommends the use of a maximum daily effluent limitation in lieu of average weekly effluent limitations for two reasons. *"First, the basis for the 7-day average for POTWs derives from the secondary treatment requirements. This basis is not related to the need for assuring achievement of water quality standards. Second, a 7-day average, which could comprise up to seven or more daily samples, could average out peak toxic concentrations and therefore the discharge's potential for causing acute toxic effects would be missed."* (TSD, pg. 96) This Order utilizes maximum daily effluent limitations in lieu of average weekly effluent limitations for ammonia, chlorine residual⁴, copper, cyanide, and selenium as recommended by the TSD for the achievement of water quality standards and for the protection of the beneficial uses of the receiving stream. Furthermore, for BOD, TSS, pH, and coliform weekly average effluent limitations have been replaced or supplemented with effluent limitations utilizing shorter averaging periods. The rationale for using shorter averaging periods for these constituents is discussed in Attachment F, Section IV.C.3., above.

3. Satisfaction of Anti-Backsliding Requirements.

Some effluent limitations in this Order are less stringent than those in the previous Order. As discussed below this relaxation of effluent limitations is consistent with the anti-backsliding requirements of the Clean Water Act sections 402(o) or 303(d)(4), or where applicable, 40CFR 122.44(l).

a. Effluent Limitations

- i. **Copper.** Order No. R5-2003-0003, Amendment No. 1 required final effluent limitations for copper. However, recent studies show, and the Regional Water Board concurs, that for copper the lowest effluent hardness may be used for determining the applicable water quality criteria that is both reasonable and fully protective of the beneficial uses of the receiving water (See previous

⁴ This Order applies the USEPA National Ambient Water Quality Criteria for chlorine directly as effluent limitations (1 hour average, acute, and 4-day average, chronic). See Section IV.C.3., above, for rationale regarding the chlorine residual effluent limitations.

section IV.C.2.b. Hardness for detailed discussion). Copper concentrations in both the effluent and the receiving water monitoring results were detected below the hardness dependent criteria for the protection of freshwater aquatic life, which is based upon this new information (For detailed discussion see previous section IV.C.3.h.). This Order removes the effluent limitations for copper because the discharge does not demonstrate a reasonable potential to cause or contribute to an in-stream excursion of the CTR criteria for copper.

- ii. **Dichloromethane.** Order No R5-2003-0003, Amendment No. 1 contained effluent limitations for dichloromethane. Analytical monitoring results obtained since issuance of the previous permit, demonstrated that the MEC and the maximum observed upstream receiving water dichloromethane concentration did not exceed the CTR criteria for dichloromethane.

Based on the new information and the procedures established in Section 1.3 of the SIP for determining reasonable potential, the discharge no longer demonstrates reasonable potential to exceed water quality criteria for dichloromethane. Therefore, this Order removes the previously required effluent limitations for dichloromethane.

- iii. **Dioxin/Furans.** Order No R5-2003-0003, Amendment No. 1 contained effluent limitations for dioxin/furans. Analytical monitoring results obtained since issuance of the previous permit, demonstrated that the MEC and the maximum observed upstream receiving water dioxin/furans concentration did not exceed the CTR criteria for dioxin/furans.

Based on the new information and the procedures established in Section 1.3 of the SIP for determining reasonable potential, the discharge no longer demonstrates reasonable potential to exceed water quality criteria for dioxin/furans. Therefore, this Order removes the previously required effluent limitations for dioxin/furans.

- iv. **Electrical Conductivity (EC).** Order No. R5-2003-0003, Amendment No. 1 required that the Discharger meet the final average monthly effluent limitation of 900 $\mu\text{mhos/cm}$ for electrical conductivity, based on the lowest recommended salinity levels (secondary maximum contaminant levels) for municipal and domestic water supply. The Discharger was never able to comply consistently with the existing limitation despite properly operating its treatment facilities and implementing required source controls. There is also new information available indicating the salinity levels in the receiving water, including the existing discharge, are below the 900 $\mu\text{mhos/cm}$ monthly standard; this information was not available at the time the previous permit was developed. The Discharger has conducted several studies to identify and minimize salinity sources and has found that it will be necessary to change water supplies to meet the existing limitation, which could take many years to accomplish. This Order establishes an interim Total Dissolved Solids mass limitation based on existing regulated flow to prevent increases to the existing

salt loading to the receiving water, and an interim monthly average EC limit of 1400 $\mu\text{mhos/cm}$. These interim limits will be replaced with final limits that protect agricultural beneficial uses. Removal of the 900 $\mu\text{mhos/cm}$ EC limit is consistent with antidegradation requirements. Removal of the limit is therefore allowed under CWA sections 303(d)(4) and 402(o)(2)(B)(i) and (E).

- v. **Lead.** Order No R5-2003-0003, Amendment No. 1 contained effluent limitations for lead. Analytical monitoring results obtained since issuance of the previous permit, demonstrated that the MEC and the maximum observed upstream receiving water lead concentration did not exceed the CTR criteria for lead.

Based on the new information and the procedures established in Section 1.3 of the SIP for determining reasonable potential, the discharge no longer demonstrates reasonable potential to exceed water quality criteria for lead. Therefore, this Order removes the previously required effluent limitations for lead.

- vi. **Settleable Solids.** Order No R5-2003-0003, Amendment No. 1 contained effluent limitations for settleable solids of 0.1 ml/L as a daily maximum. Analytical monitoring results obtained since issuance of the previous permit showed that settleable solids were never detected above 0.1 ml/L. Based on this new information, this Order does not contain the previously required effluent limitations for settleable solids because the discharge does not demonstrate a reasonable potential to cause or contribute to an in-stream excursion.

- vii. **Turbidity.** Order No. R5-2003-0003, Amendment No. 1 contained effluent limitations for turbidity. The prior limitations were solely an operational check to ensure the treatment system was functioning properly. The prior effluent limitations were not intended to regulate turbidity in the receiving water. Rather, turbidity is an operational parameter to determine proper system functioning and not a water quality based effluent limitation.

The revised Order contains performance based operational turbidity specifications to be met prior to disinfection in lieu of effluent limitations. The revised Order does not include effluent limitations for turbidity. However, the performance-based specification in this Order is an equivalent limit that is not less stringent, and therefore does not constitute backsliding.

The proposed revised operational specifications for turbidity are the same as the effluent limitations in the previous permit, with the inclusion of a more stringent requirement for an instantaneous maximum limit at any time. (See Special Provision VI.C.4 Ultraviolet Disinfection (UV) System Operating Specifications for turbidity specifications.) The proposed revised permit places the point of compliance at the final effluent after disinfection. These revisions are consistent with state regulations implementing recycled water

requirements. The revisions in the electrical conductivity (EC) and turbidity limitations are consistent with the antidegradation provisions of 40 CFR 131.12 and State Water Resources Control Board Resolution 68-16 because this Order imposes equivalent or more stringent requirements than the prior permit and therefore does not allow degradation. Any impact on existing water quality will be insignificant.

4. Satisfaction of Antidegradation Policy

This Order provides for an increase in the volume and mass of pollutants discharged and is consistent with the antidegradation provisions of 40 CFR 131.12 and State Water Resources Control Board Resolution 68-16 as updated by State Water Board Administrative Procedure Update (APU) No. 90-004. The following is a summary of the Antidegradation Analysis Report (AAR) titled, *Antidegradation Analysis for the UC Davis Wastewater Treatment Plant Expansion*, 14 December 2007 submitted by the Discharger to evaluate the proposed increase in discharge from 2.7 mgd to 3.6 mgd:

- a. **Water Quality Parameters and Beneficial Uses which will be Affected by this Order and the Extent of the Impact.** This Order does not impact beneficial uses of the receiving water or downstream receiving waters. All beneficial uses will be maintained and protected. The analysis performed by the Discharger demonstrated that the increase in WWTP discharge into Putah Creek would not result in lowered water quality at the significance threshold of 10 (ten) percent for detected constituent concentrations. Although the concentrations are still within water quality objectives downstream of the WWTP discharge, electrical conductivity (EC) and selenium will have some incremental increase and use a portion of Putah Creek's assimilative capacity. Both constituents are primarily due to the relatively high levels found in the campus domestic water supplies.

Projected mass loading concentrations for selenium will take 13.5% of existing creek assimilative capacity, which exceeds the 10% threshold. The Discharger expects this issue to be resolved once the University completes projects (see Fact Sheet Section IV.C.3.s.v.) to reduce EC levels, which will concurrently address selenium.

- b. **Scientific Rationale for Determining Potential Lowering of Water Quality.** The rationale used in the AAR is based on Code of Federal Regulations, Section 131.12. (40CFR 131.12), USEPA memorandum *regarding Tier 2 Antidegradation Reviews and Significance Thresholds* (USEPA 2005) USEPA Region 9 *Guidance on Implementing the Antidegradation Provisions of 40 CFR 131.12* (USEPA 1987), State Water Resources Control Board (SWRCB) Resolution No. 68-16, a SWRCB 1987 policy memorandum to the Regional Water Quality Control Boards (RWQCB), and an Administrative Procedures Update (APU 90-004) issued by SWRCB to the RWQCBs. The scientific rationale the Discharger used to determine if the Order allows a lowering of water quality is to determine the reduction of assimilative capacity. Assimilative capacity was calculated on a mass-balanced, concentration based, and for bioaccumulative constituents,

calculated on a mass loading basis. This approach is consistent with recent USEPA guidance and addresses a key objective of the AAR to "[c]ompare receiving water quality to the water quality objectives established to protect designated beneficial uses" (APU90-004). USEPA recommended ten (10) percent as a measure of significance for identifying those substantial lowerings of water quality that should receive a full tier 2 antidegradation review. APU 90-004 requires the consideration of "feasible alternative control measures" as part of the procedures for a complete antidegradation analysis. The Discharger analyzed each pollutant detected in the effluent and receiving water to determine if the increased discharge of 3.6 mgd authorized by this Order potentially allows significant increase of the amount of pollutants present in the downstream receiving water. Pollutants that significantly increased concentration or mass downstream required an alternatives analysis to determine whether implementation of alternatives to the proposed action would be in the best socioeconomic interest of the people of the region, and be to the maximum benefit of the people of the State. Details of the scientific rationale are discussed in detail in the AAR.

c. **Description of Alternative Control Measures.** The Discharger considered several alternatives that would reduce the lowering of water quality resulting from the additional 0.9 mgd of discharge capacity proposed with the plant expansion. These alternatives included no project-no build, higher degree of treatment using reverse osmosis, seasonal recycled water irrigation, divert additional wastewater to the City of Davis Wastewater Treatment Plant, and divert additional effluent to evaporation ponds. Each alternative was assessed for feasibility in implementation and effectiveness in reducing the lowering of water quality. These alternatives were not selected because they would not meet basic project objectives and/or were determined to be infeasible for technological, environmental, and economic reasons. Detailed description of the alternatives are discussed in the Antidegradation Analysis Report (AAR) titled, *Antidegradation Analysis for the UC Davis Wastewater Treatment Plant Expansion*, 14 December 2007.

d. **Description and Justification of Socioeconomic Evaluation.** The increase in the discharge allows wastewater utility service necessary to accommodate housing and new research facilities, and is considered to be a social and economical benefit to the people of the region and State. The discharge is a Title 22, or equivalent, tertiary-level treat wastewater, which is a high level of treatment of sewage waste that is considered best practicable treatment or control (BPTC) for most constituents in the wastewater and will result in attaining water quality standards applicable to the discharge.

Based on the Antidegradation Analysis provided by the Discharger, the Regional Water Board finds that the permitted discharge is consistent with the antidegradation provisions of 40 CFR 131.12 and State Water Resources Control Board Resolution 68-16 and that any incremental lowering of water quality (i.e., selenium and salinity) is likely to be temporary, and is necessary to provide an

important social and economical benefit and is in the maximum benefit to the people of the State. This Order provides for an increase in the volume and mass of pollutants discharged into Putah Creek, by allowing an increased regulated flow of 3.6 mgd. The increase will not have significant impacts on aquatic life, which is the beneficial use most likely affected by the pollutants discharged (BOD, suspended solids, chlorine residual, temperature, and metals). The increase will not cause a violation of water quality objectives. The increase in the discharge allows wastewater utility service necessary to accommodate housing, educational and economic expansion in the area, and is considered to be a social and economical benefit to the people of the State. Compliance with these requirements will result in the use of best practicable treatment or control of the discharge.

Summary of Final Effluent Limitations Discharge Points No. 001 and No. 002

Table F-10. Summary of Final Effluent Limitations

Parameter	Units	Effluent Limitations					Basis
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum	
Biochemical Oxygen Demand (BOD ₅) (5-day @ 20°C)	mg/L ¹	10	15	20	--	--	PO
	lbs/day ²	300	450	600	--	--	
Total Suspended Solids	mg/L	10	15	20	--	--	TB
	lbs/day ²	300	450	600	--	--	
pH	Standard Units	--	--	--	6.5	8.5	
Flow	mgd	3.6	--	--	--	--	
Ammonia (as N) 1 May – 31 October	mg/L	0.74	--	1.5	--	--	
	lbs/day ²	18	--	36	--	--	
Ammonia (as N) 1 November – 30 April	mg/L	1.11	--	2.14	--	--	
	lbs/day ²	33	--	64	--	--	
Aluminum (total)	µg/L	276	200 ³	750	--	--	
Cyanide	µg/L	4.3	--	8.5	--	--	
Iron, Total	µg/L	300	--	--	--	--	
	lbs/day ⁴	6.8	--	--	--	--	
Nitrate + Nitrite (as N)	mg/L	10	--	--	--	--	
	lbs/day ²	300 ²	--	--	--	--	
Selenium (total)	µg/L	3.5	--	9.2	--	--	
	lbs/day ²	0.11 ²	--	0.28 ²	--	--	
Acute Toxicity ⁵	% survival	--	--	--	--	--	
Chronic Toxicity ⁶	--	--	--	--	--	--	
Total Residual Chlorine ⁷	mg/L	0.01 ⁸	--	0.02 ⁹	--	--	
Total Coliform Organisms	MPN	--	2.2	23 ¹⁰	--	240	

PO – Previous Order No. R5-2003-0003, Amendment No. 1

TB – Technology Based

¹ To be ascertained as a 24-hour composite.

² Based on a average dry weather flow of 3.6 mgd.

³ Annual average.

⁴ Based on a average dry weather flow of 2.7 mgd.

⁵ Survival of aquatic organisms in 96-hour bioassays of undiluted waste shall be no less than 70%, minimum for any one bioassay; and 90%, median for any three consecutive bioassays.

⁶ There shall be no chronic toxicity in the effluent discharge.

⁷ Total chlorine residual must be monitored with a method sensitive to and accurate at the permitted level of 0.01 mg/L.

⁸ 4-day average.

⁹ 1-hour average.

¹⁰ Not to exceed 23 MPN more than once in a 30-day period.

E. Interim Effluent Limitations

1. **Electrical Conductivity (EC).** The interim limitations for EC in this Order are based on the current treatment plant performance. In developing the interim limitation for EC, the highest running monthly average was taken from 1,598 data points.

Table F-11 summarizes the calculations of the interim effluent limitation for EC.

Table F-11. Interim Effluent Limitation Calculation Summary

Parameter	Units	MEC	Mean	Maximum 30-Day Running Average	Number of Samples	Interim Limitation
Electrical Conductivity (EC)	µmhos/cm	1,679	1,091	1,400	1,598	1,400

2. **Total Dissolved Solids.** Effective immediately, the effluent total dissolved solids mass loading shall not exceed 536,100 pounds/month. This performance-based effluent mass limitation is calculated as follows:

$$\text{Mass Limitation} = (99^{\text{th}} \text{ percentile TDS concentration observed of } 782.7 \text{ mg/L}) \times (\text{regulated flow of } 2.7 \text{ mgd}) \times (8.34 \text{ conversion factor}^1) \times (365 \text{ days per year}) / (12 \text{ months per year})$$

$$= 536,100 \text{ pounds per month}$$

¹Conversion factor for pounds per day = (flow in 10⁶ gallons/day) x (pollutant concentration in 10⁻³ grams per liter) x (3.7854 liters/gallon) x (1 pound/454 grams) = 8.34 pounds per day

3. **Mercury, Total.** The interim limitations for mercury in this Order are based on the current treatment plant performance. In developing the interim limitation for mercury, the highest observed effluent mercury data and average dry weather flow were used and converted to a mass limit. The total annual mass loading for total mercury shall not exceed 0.10 pounds.

The Regional Water Board finds that the Discharger can undertake source control and treatment plant measures to maintain compliance with the interim limitations included in this Order. Interim limitations are established when compliance with effluent limitations cannot be achieved by the existing discharge. Discharge of constituents in concentrations in excess of the final effluent limitations, but in compliance with the interim effluent limitations, can significantly degrade water quality and adversely affect the beneficial uses of the receiving stream on a long-term basis. The interim limitations, however, establish an enforceable ceiling concentration until compliance with the effluent limitation can be achieved.

F. Land Discharge Specifications – Not Applicable

G. Reclamation Specifications

Treated wastewater discharged for reclamation is regulated under separate waste discharge requirements and must meet the requirements of California Code of Regulations, Title 22.

The Discharger does not propose to reclaim treated effluent.

V. RATIONALE FOR RECEIVING WATER LIMITATIONS

Basin Plan water quality objectives to protect the beneficial uses of surface water and groundwater include numeric objectives and narrative objectives, including objectives for chemical constituents, toxicity, and tastes and odors. The toxicity objective requires that surface water and groundwater be maintained free of toxic substances in concentrations that produce detrimental physiological responses in humans, plants, animals, or aquatic life. The chemical constituent objective requires that surface water and groundwater shall not contain chemical constituents in concentrations that adversely affect any beneficial use or that exceed the maximum contaminant levels (MCLs) in Title 22, CCR. The tastes and odors objective states that surface water and groundwater shall not contain taste- or odor-producing substances in concentrations that cause nuisance or adversely affect beneficial uses. The Basin Plan requires the application of the most stringent objective necessary to ensure that surface water and groundwater do not contain chemical constituents, toxic substances, radionuclides, or taste and odor producing substances in concentrations that adversely affect domestic drinking water supply, agricultural supply, or any other beneficial use.

A. Surface Water

1. CWA section 303(a-c), requires states to adopt water quality standards, including criteria where they are necessary to protect beneficial uses. The Regional Water Board adopted water quality criteria as water quality objectives in the Basin Plan. The Basin Plan states that “[t]he numerical and narrative water quality objectives define the least stringent standards that the Regional Board will apply to regional waters in order to protect the beneficial uses.” The Basin Plan includes numeric and narrative water quality objectives for various beneficial uses and water bodies. This Order contains Receiving Surface Water Limitations based on the Basin Plan numerical and narrative water quality objectives for bacteria, biostimulatory substances, chemical constituents, color, dissolved oxygen, floating material, oil and grease, pH, pesticides, radioactivity, salinity, sediment, settleable material, suspended material, tastes and odors, temperature, toxicity, and electrical conductivity.

Numeric Basin Plan objectives for bacteria, dissolved oxygen, pH, and temperature, are applicable to this discharge and have been incorporated as Receiving Surface Water Limitations. Rational for these numeric receiving surface water limitations are as follows:

- a. **Ammonia.** The Basin Plan states that, “[w]aters shall not contain un-ionized ammonia in amounts which adversely affect beneficial uses. In no case shall the discharge of wastes cause concentrations of un-ionized ammonia (NH_3) to exceed 0.025 mg/l (as N) in receiving waters.”
- b. **Bacteria.** The Basin Plan includes a water quality objective that “[i]n water designated for contact recreation (REC-1), the fecal coliform concentration based on a minimum of not less than five samples for any 30-day period shall not exceed a geometric mean of 200/100 ml, nor shall more than ten percent of the total number of samples taken during any 30-day period exceed 400/100 ml.” Numeric Receiving Water Limitations for bacteria are included in this Order and are based on the Basin Plan objective.
- c. **Biostimulatory Substances.** The Basin Plan includes a water quality objective that “[W]ater shall not contain biostimulatory substances which promote aquatic growths in concentrations that cause nuisance or adversely affect beneficial uses.” Receiving Water Limitations for biostimulatory substances are included in this Order and are based on the Basin Plan objective.
- d. **Color.** The Basin Plan includes a water quality objective that “[W]ater shall be free of discoloration that causes nuisance or adversely affects beneficial uses.” Receiving Water Limitations for color are included in this Order and are based on the Basin Plan objective.
- e. **Chemical Constituents.** The Basin Plan includes a water quality objective that “[W]aters shall not contain chemical constituents in concentrations that adversely

affect beneficial uses." Receiving Water Limitations for chemical constituents are included in this Order and are based on the Basin Plan objective.

- f. **Dissolved Oxygen.** The Basin Plan includes a water quality objective that *"[W]ithin the legal boundaries of the Delta, the dissolved oxygen concentrations shall not be reduced below: 7.0 mg/L in the Sacramento River (below the I Street Bridge) and in all Delta waters west of the Antioch Bridge; 6.0 mg/L in the San Joaquin River (between Turner Cut and Stockton, 1 September through 30 November); and 5.0 mg/L in all other Delta waters except those bodies of water which are constructed for special purposes and from which fish have been excluded or where the fishery is not important as a beneficial use."* Numeric Receiving Water Limitations for dissolved oxygen are included in this Order and are based on the Basin Plan objective.
- g. **Floating Material.** The Basin Plan includes a water quality objective that *"[W]ater shall not contain floating material in amounts that cause nuisance or adversely affect beneficial uses."* Receiving Water Limitations for floating material are included in this Order and are based on the Basin Plan objective.
- h. **Oil and Grease.** The Basin Plan includes a water quality objective that *"[W]aters shall not contain oils, greases, waxes, or other materials in concentrations that cause nuisance, result in a visible film or coating on the surface of the water or on objects in the water, or otherwise adversely affect beneficial uses."* Receiving Water Limitations for oil and grease are included in this Order and are based on the Basin Plan objective.
- i. **pH.** The Basin Plan includes water quality objective that *"[T]he pH shall not be depressed below 6.5 nor raised above 8.5. Changes in normal ambient pH levels shall not exceed 0.5 in fresh waters with designated COLD or WARM beneficial uses"*. This Order includes receiving water limitations for both pH range and pH change.

The Basin Plan allows an appropriate averaging period for pH change in the receiving stream. Since there is no technical information available that indicates that aquatic organisms are adversely affected by shifts in pH within the 6.5 to 8.5 range, an averaging period is considered appropriate and a monthly averaging period for determining compliance with the 0.5 receiving water pH limitation is included in this Order.

- j. **Pesticides.** The Basin Plan includes a water quality objective for pesticides beginning on page III-6.00. Receiving Water Limitations for pesticides are included in this Order and are based on the Basin Plan objective.
- k. **Radioactivity.** The Basin Plan includes a water quality objective that *"[R]adionuclides shall not be present in concentrations that are harmful to human, plant, animal or aquatic life nor that result in the accumulation of radionuclides in the food web to an extent that presents a hazard to human, plant, animal or aquatic life."* The Basin Plan states further that *"[A]t a minimum,*

waters designated for use as domestic or municipal supply (MUN) shall not contain concentrations of radionuclides in excess of the maximum contaminant levels (MCLs) specified in Table 4 (MCL Radioactivity) of Section 64443 of Title 22 of the California Code of Regulations... Receiving Water Limitations for radioactivity are included in this Order and are based on the Basin Plan objective.

- l. Sediment.** The Basin Plan includes a water quality objective that “[T]he suspended sediment load and suspended sediment discharge rate of surface waters shall not be altered in such a manner as to cause nuisance or adversely affect beneficial uses” Receiving Water Limitations for suspended sediments are included in this Order and are based on the Basin Plan objective.
- m. Settleable Material.** The Basin Plan includes a water quality objective that “[W]aters shall not contain substances in concentrations that result in the deposition of material that causes nuisance or adversely affects beneficial uses.” Receiving Water Limitations for settleable material are included in this Order and are based on the Basin Plan objective.
- n. Suspended Material.** The Basin Plan includes a water quality objective that “[W]aters shall not contain suspended material in concentrations that cause nuisance or adversely affect beneficial uses.” Receiving Water Limitations for suspended material are included in this Order and are based on the Basin Plan objective.
- o. Taste and Odors.** The Basin Plan includes a water quality objective that “[W]ater shall not contain taste- or odor-producing substances in concentrations that impart undesirable tastes or odors to domestic or municipal water supplies or to fish flesh or other edible products of aquatic origin, or that cause nuisance, or otherwise adversely affect beneficial uses.” Receiving Water Limitations for taste- or odor-producing substances are included in this Order and are based on the Basin Plan objective.
- p. Temperature.** Putah Creek has the beneficial uses of both COLD and WARM. The Basin Plan includes the objective that “[a]t no time or place shall the temperature of COLD or WARM intrastate waters be increased more than 5°F above natural receiving water temperature.” This Order includes a receiving water limitation based on this objective.
- q. Toxicity.** The Basin Plan includes a water quality objective that “[A]ll waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life.” Receiving Water Limitations for toxicity are included in this Order and are based on the Basin Plan objective.

- r. **Turbidity.** The Basin Plan includes a water quality objective that “[/]increases in turbidity attributable to controllable water quality factors shall not exceed the following limits:
- *Where natural turbidity is between 0 and 5 Nephelometric Turbidity Units (NTUs), increases shall not exceed 1 NTU.*
 - *Where natural turbidity is between 5 and 50 NTUs, increases shall not exceed 20 percent.*
 - *Where natural turbidity is between 50 and 100 NTUs, increases shall not exceed 10 NTUs.*
 - *Where natural turbidity is greater than 100 NTUs, increases shall not exceed 10 percent.”*

B. Groundwater

1. The beneficial uses of the underlying ground water are municipal and domestic supply, industrial service supply, industrial process supply, and agricultural supply.
2. Basin Plan water quality objectives include narrative objectives for chemical constituents, tastes and odors, and toxicity of groundwater. The toxicity objective requires that groundwater be maintained free of toxic substances in concentrations that produce detrimental physiological responses in humans, plants, animals, or aquatic life. The chemical constituent objective states groundwater shall not contain chemical constituents in concentrations that adversely affect any beneficial use. The tastes and odors objective prohibits taste- or odor-producing substances in concentrations that cause nuisance or adversely affect beneficial uses. The Basin Plan also establishes numerical water quality objectives for chemical constituents and radioactivity in ground waters designated as municipal supply. These include, at a minimum, compliance with MCLs in Title 22 of the CCR. The bacteria objective prohibits coliform organisms at or above 2.2 MPN/100 ml. The Basin Plan requires the application of the most stringent objective necessary to ensure that waters do not contain chemical constituents, toxic substances, radionuclides, taste- or odor-producing substances, or bacteria in concentrations that adversely affect municipal or domestic supply, agricultural supply, industrial supply or some other beneficial use.
3. Groundwater limitations are required to protect the beneficial uses of the underlying groundwater.

VI. RATIONALE FOR MONITORING AND REPORTING REQUIREMENTS

Section 122.48 requires that all NPDES permits specify requirements for recording and reporting monitoring results. Water Code sections 13267 and 13383 authorizes the Regional Water Board to require technical and monitoring reports. The Monitoring and Reporting Program (MRP), Attachment E of this Order, establishes monitoring and reporting requirements to implement federal and state requirements. The following provides the rationale for the monitoring and reporting requirements contained in the MRP for this facility.

A. Influent Monitoring

Influent monitoring is required to collect data on the characteristics of the wastewater and to assess compliance with effluent limitations (e.g., BOD and TSS percent reduction requirements). The Monitoring and Reporting Requirements (Attachment E) includes influent monitoring requirements in Attachment E, Section III.A.

B. Effluent Monitoring

1. Pursuant to the requirements of 40 CFR §122.44(i)(2) effluent monitoring is required for all constituents with effluent limitations. Effluent monitoring is necessary to assess compliance with effluent limitations, assess the effectiveness of the treatment process, and to assess the impacts of the discharge on the receiving stream and groundwater. Effluent monitoring requirements for flow, chlorine residual, pH, temperature, electrical conductivity, total coliform organisms, ammonia (as N), BOD, total suspended solids, total dissolved solids, hardness, aluminum, cyanide, nitrate + nitrite (as N), iron, and phosphorus have been carried over from Monitoring and Reporting Program No. R5-2003-0003, Amendment No. 1 to determine compliance with effluent limitations for these parameters.

Monitoring data collected over the previous permit term for dichloromethane, dioxin/furans, lead, and settleable solids did not demonstrate reasonable potential to exceed water quality objectives. Specific monitoring requirements for these parameters have not been carried over, however these parameters must be monitored as part of the quarterly priority pollutant monitoring required during the third year of the permit term.

Monitoring data submitted by the Discharger during the previous permit term indicates that the discharge has reasonable potential to exceed water quality criteria for selenium. Monthly monitoring has been established to determine compliance with the applicable effluent limitation.

C. Whole Effluent Toxicity Testing Requirements

1. **Acute Toxicity.** Quarterly 96-hour bioassay testing was required in the previous permit in order to demonstrate compliance with the effluent limitation for acute toxicity. This monitoring requirement will be carried over to the new Order.
2. **Chronic Toxicity.** Quarterly chronic whole effluent toxicity testing was required in the previous permit in order to demonstrate compliance with the Basin Plan's narrative toxicity objective. This monitoring requirement will be carried over to the new Order to provide the Regional Water Board with toxicity data necessary to determine if future effluent limitations would be necessary.

D. Receiving Water Monitoring

1. Surface Water

- a. Receiving water monitoring is necessary to assess compliance with receiving water limitations and to assess the impacts of the discharge on the receiving stream. The receiving water monitoring requirements from Monitoring and Reporting Program Order No. R5-0003-0003, Amendment No. 1 has been carried over to the Order.
- b. Quarterly monitoring for priority pollutants upstream of Discharge Point No. 1 at RSW-001U is required during the third year of the permit term to collect the necessary data to determine reasonable potential as required in section 1.2 of the SIP. The pH and hardness (as CaCO_3) of the upstream receiving water shall also be monitored concurrently with the priority pollutants to ensure the water quality criteria/objectives are correctly adjusted for the receiving water when determining reasonable potential as specified in section 1.3 of the SIP.

2. Groundwater

- a. Section 13267 of the California Water Code states, in part, "(a) A Regional Water Board, in establishing...waste discharge requirements... may investigate the quality of any waters of the state within its region" and "(b) (1) In conducting an investigation..., the Regional Water Board may require that any person who... discharges... waste...that could affect the quality of waters within its region shall furnish, under penalty of perjury, technical or monitoring program reports which the Regional Water Board requires. The burden, including costs, of these reports shall bear a reasonable relationship to the need for the report and the benefits to be obtained from the reports." In requiring those reports, the Regional Water Board shall provide the person with a written explanation with regard to the need for the reports, and shall identify the evidence that supports requiring that person to provide the reports. The Monitoring and Reporting Program (Attachment E) is issued pursuant to California Water Code Section 13267. The groundwater monitoring and reporting program required by this Order and the Monitoring and Reporting Program are necessary to assure compliance with these waste discharge requirements. The Discharger is responsible for the discharges of

waste at the facility subject to this Order.

- b. Monitoring of the groundwater must be conducted to determine if the discharge has caused an increase in constituent concentrations, when compared to background. The monitoring must, at a minimum, require a complete assessment of groundwater impacts including the vertical and lateral extent of degradation, an assessment of all wastewater-related constituents which may have migrated to groundwater, an analysis of whether additional or different methods of treatment or control of the discharge are necessary to provide best practicable treatment or control to comply with Resolution No. 68-16. Economic analysis is only one of many factors considered in determining best practicable treatment or control. If monitoring indicates that the discharge has incrementally increased constituent concentrations in groundwater above background, this permit may be reopened and modified. Until groundwater monitoring is sufficient, this Order contains Groundwater Limitations that allow groundwater quality to be degraded for certain constituents when compared to background groundwater quality, but not to exceed water quality objectives. If groundwater quality has been degraded by the discharge, the incremental change in pollutant concentration (when compared with background) may not be increased. If groundwater quality has been or may be degraded by the discharge, this Order may be reopened and specific numeric limitations established consistent with Resolution 68-16 and the Basin Plan.
- c. This Order requires the Discharger to continue groundwater monitoring and includes a regular schedule of groundwater monitoring in the attached Monitoring and Reporting Program. The groundwater monitoring reports are necessary to evaluate impacts to waters of the State to assure protection of beneficial uses and compliance with Regional Board plans and policies, including Resolution 68-16. Evidence in the record includes effluent monitoring data that indicates the presence of constituents that may degrade groundwater and surface water.

E. Ultraviolet (UV) Disinfection System Monitoring

UV System specifications and monitoring and reporting are required when the UV system becomes operational to ensure that adequate UV dosage is applied to the wastewater to inactivate pathogens (e.g., viruses in the wastewater). UV Disinfection system monitoring is imposed pursuant to requirements established by the California Department of Public Health (DPH) and the National Water Research Institute (NWRI) and American Water Works Association Research Foundation (NWRI/AWWRF's "*Ultraviolet Disinfection Guidelines for Drinking Water and Water Reuse*").

F. Other Monitoring Requirements

1. Biosolids Monitoring

Biosolids monitoring is required to ensure compliance with the biosolids disposal requirements (Special Provisions VI.C.6.a.). Biosolids disposal requirements are imposed pursuant to 40 CFR Part 503 to protect public health and prevent groundwater degradation.

2. Water Supply Monitoring

Water supply monitoring is required to evaluate the source of EC, selenium, and TDS in the wastewater.

VII. RATIONALE FOR PROVISIONS

A. Standard Provisions

Standard Provisions, which apply to all NPDES permits in accordance with section 122.41, and additional conditions applicable to specified categories of permits in accordance with section 122.42, are provided in Attachment D. The discharger must comply with all standard provisions and with those additional conditions that are applicable under section 122.42.

Section 122.41(a)(1) and (b) through (n) establish conditions that apply to all State-issued NPDES permits. These conditions must be incorporated into the permits either expressly or by reference. If incorporated by reference, a specific citation to the regulations must be included in the Order. Section 123.25(a)(12) allows the state to omit or modify conditions to impose more stringent requirements. In accordance with section 123.25, this Order omits federal conditions that address enforcement authority specified in sections 122.41(j)(5) and (k)(2) because the enforcement authority under the Water Code is more stringent. In lieu of these conditions, this Order incorporates by reference Water Code section 13387(e).

B. Special Provisions

1. Reopener Provisions

- a. **Mercury (Special Provisions IV.C.1.c).** This provision allows the Regional Water Board to reopen this Order in the event a mercury TMDL program is adopted. In addition, this Order may be reopened if the Regional Water Board determines that a mercury offset program is feasible for dischargers subject to NPDES permits.
- b. **Whole Effluent Toxicity.** This Order requires the Discharger to investigate the causes of, and identify corrective actions to reduce or eliminate effluent toxicity through a Toxicity Reduction Evaluation (TRE). This Order may be reopened to include a numeric chronic toxicity limitation, a new acute toxicity limitation, and/or a limitation for a specific toxicant identified in the TRE. Additionally, if a numeric

chronic toxicity water quality objective is adopted by the State Water Board, this Order may be reopened to include a numeric chronic toxicity limitation based on that objective.

- c. **Water Effects Ratio (WER) and Metal Translators.** A default WER of 1.0 has been used in this Order for calculating CTR criteria for applicable priority pollutant inorganic constituents. In addition, default dissolved-to-total metal translators have been used to convert water quality objectives from dissolved to total recoverable when developing effluent limitations for inorganic constituents contained within this Order. If the Discharger performs studies to determine site-specific WERs and/or site-specific dissolved-to-total metal translators, this Order may be reopened to modify the effluent limitations for the applicable inorganic constituents.

2. Special Studies and Additional Monitoring Requirements

- a. **Chronic Whole Effluent Toxicity Requirements.** The Basin Plan contains a narrative toxicity objective that states, "*All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life.*" (Basin Plan at III-8.00.) Based on quarterly whole effluent chronic toxicity testing performed by the Discharger from 18 October 2002 through 10 July 2007, the discharge has reasonable potential to cause or contribute to an in-stream excursion above of the Basin Plan's narrative toxicity objective.

This provision requires the Discharger to develop a Toxicity Reduction Evaluation (TRE) Work Plan in accordance with EPA guidance. In addition, the provision provides a numeric toxicity monitoring trigger and requirements for accelerated monitoring, as well as, requirements for TRE initiation if a pattern of toxicity has been demonstrated.

Monitoring Trigger. A numeric toxicity monitoring trigger of > 1 TUc (where TUc = 100/NOEC) is applied in the provision, because this Order does not allow any dilution for the chronic condition. Therefore, a TRE is triggered when the effluent exhibits a pattern of toxicity at 100% effluent.

Accelerated Monitoring. The provision requires accelerated WET testing when a regular WET test result exceeds the monitoring trigger. The purpose of accelerated monitoring is to determine, in an expedient manner, whether there is a pattern of toxicity before requiring the implementation of a TRE. Due to possible seasonality of the toxicity, the accelerated monitoring should be performed in a timely manner, preferably taking no more than 2 to 3 months to complete.

The provision requires accelerated monitoring consisting of four chronic toxicity tests every two weeks using the species that exhibited toxicity. Guidance regarding accelerated monitoring and TRE initiation is provided in the *Technical*

Support Document for Water Quality-based Toxics Control, EPA/505/2-90-001, March 1991 (TSD). The TSD at page 118 states, "EPA recommends if toxicity is repeatedly or periodically present at levels above effluent limits more than 20 percent of the time, a TRE should be required." Therefore, four accelerated monitoring tests are required in this provision. If no toxicity is demonstrated in the four accelerated tests, then it demonstrates that toxicity is not present at levels above the monitoring trigger more than 20 percent of the time (only 1 of 5 tests are toxic, including the initial test). However, notwithstanding the accelerated monitoring results, if there is adequate evidence of a pattern of effluent toxicity (i.e. toxicity present exceeding the monitoring trigger more than 20 percent of the time), the Executive Officer may require that the Discharger initiate a TRE.

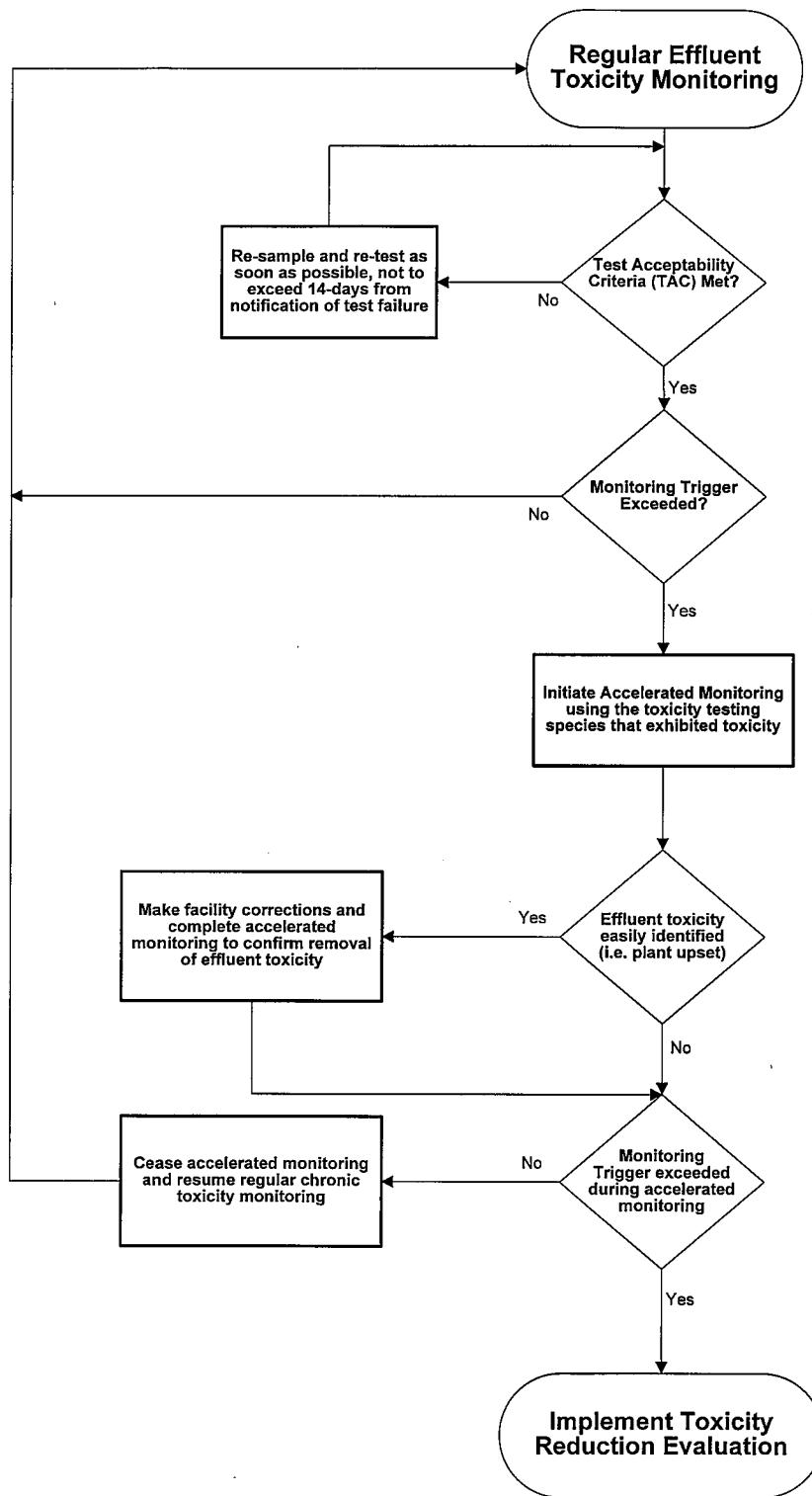
See the WET Accelerated Monitoring Flow Chart (Figure F-1), below; for further clarification of the accelerated monitoring requirements and for the decision points for determining the need for TRE initiation.

TRE Guidance. The Discharger is required to prepare a TRE Work Plan in accordance with USEPA guidance. Numerous guidance documents are available, as identified below:

- *Toxicity Reduction Evaluation Guidance for Municipal Wastewater Treatment Plants, (EPA/833B-99/002), August 1999.*
- *Generalized Methodology for Conducting Industrial TREs, (EPA/600/2-88/070), April 1989.*
- *Methods for Aquatic Toxicity Identification Evaluations: Phase I Toxicity Characterization Procedures, Second Edition, EPA 600/6-91/005F, February 1991.*
- *Toxicity Identification Evaluation: Characterization of Chronically Toxic Effluents, Phase I, EPA 600/6-91/005F, May 1992.*
- *Methods for Aquatic Toxicity Identification Evaluations: Phase II Toxicity Identification Procedures for Samples Exhibiting acute and Chronic Toxicity, Second Edition, EPA 600/R-92/080, September 1993.*
- *Methods for Aquatic Toxicity Identification Evaluations: Phase III Toxicity Confirmation Procedures for Samples Exhibiting Acute and Chronic Toxicity, Second Edition, EPA 600/R-92/081, September 1993.*
- *Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms, Fifth Edition, EPA-821-R-02-012, October 2002.*

- *Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms*, Fourth Edition, EPA-821-R-02-013, October 2002.
- *Technical Support Document for Water Quality-based Toxics Control*, EPA/505/2-90-001, March 1991

Figure F-1
WET Accelerated Monitoring Flow Chart



- b. **Water Reclamation Report.** The Discharger shall complete a water reclamation report to evaluate beneficial reuse for uses including (but not limited to) landscape irrigation and agricultural use on the University of California Davis campus.
- c. **Salinity/EC Site-Specific Study.** The Discharger shall complete and submit a report on the results of a site-specific investigation of appropriate EC levels to protect agricultural beneficial use in areas irrigated with water from Putah Creek diverted downstream from the discharge.
- d. **Groundwater Monitoring (Special Provisions VI.C.2.d.).** To date, the Discharger has installed 6 groundwater monitoring wells (three located at the abandoned Primate Center wastewater facility sludge ponds and three located onsite around the wastewater treatment plant's solids stabilization basin and sludge drying beds). The Primate Center sludge ponds have been decommissioned ever since the wastewater treatment plant moved to its new location in 2000. The previous Order required a geological study and the Discharger is still conducting groundwater monitoring at the Primate Center sludge ponds because of the requirements of the previous Order. The sludge ponds are no longer in use and a thorough cleanup was conducted 8 years ago. Groundwater data was submitted to the Regional Water Board and a letter of approval was sent to the Discharger.

This Order requires the Discharger to continue groundwater monitoring at the three groundwater monitoring locations onsite at the wastewater treatment plant and includes a schedule of groundwater monitoring. This Order also removes groundwater monitoring at the Primate Center wastewater facility sludge ponds. If the monitoring shows that any constituent concentrations are increased above background water quality, the Discharger shall submit a technical report **within 90 days** following identification of groundwater impacts describing the groundwater technical report results and critiquing each evaluated component of the Facility with respect to BPTC and minimizing the discharge's impact on groundwater quality. In no case shall the discharge be allowed to exceed the Groundwater Limitations. Accordingly, this provision allows the Regional Water Board to reopen this Order to include groundwater limitations for specific constituents based on the Basin Plan's groundwater quality objectives.

3. Best Management Practices and Pollution Minimization

- a. **Pollution Minimization Plan.** The pollution minimization plan required for mercury shall, at minimum, include the following:
 - i. An estimate of all of the sources of a pollutant contributing, or potentially contributing, to the loadings of a pollutant in the treatment plant influent.
 - ii. An analysis of the methods that could be used to prevent the discharge of the pollutants into the Facility, including application of local limits to industrial or

commercial dischargers regarding pollution minimization techniques, public education and outreach, or other innovative and alternative approaches to reduce discharges of the pollutant to the Facility. The analysis also shall identify sources, or potential sources, not within the ability or authority of the Discharger to control, such as pollutants in the potable water supply, airborne pollutants, pharmaceuticals, or pesticides, and estimate the magnitude of those sources, to the extent feasible.

- iii. An estimate of load reductions that may be attained through the methods identified in subparagraph ii.
- iv. A plan for monitoring the results of the pollution minimization program.
- v. A description of the tasks, cost, and time required to investigate and implement various elements in the pollution minimization plan.
- vi. A statement of the Discharger's pollution minimization goals and strategies, including priorities for short-term and long-term action, and a description of the Discharger's intended pollution minimization activities for the immediate future.
- vii. A description of the Discharger's existing pollution minimization programs.
- viii. An analysis, to the extent feasible, of any adverse environmental impacts, including cross-media impacts or substitute chemicals that may result from the implementation of the pollution minimization program.
- ix. An analysis, to the extent feasible, of the costs and benefits that may be incurred to implement the pollution minimization program.

4. Construction, Operation, and Maintenance Specifications

a. Ultraviolet (UV) Disinfection System Operating Specifications

UV System specifications and monitoring and reporting are required to ensure that adequate UV dosage is applied to the wastewater to inactivate pathogens (e.g., viruses in the wastewater). UV dosage is dependent on several factors such as UV transmittance, UV power setting, wastewater turbidity, and wastewater flow through the UV system. Monitoring and reporting of these parameters is necessary to determine compliance with minimum dosage requirements established by the California Department of Public Health (DPH) and the National Water Research Institute (NWRI) and American Water Works Association Research Foundation NWRI/AWWRF's *"Ultraviolet Disinfection Guidelines for Drinking Water and Water Reuse"* first published in December 2000 and revised as a Second Edition dated May 2003. In addition, a Memorandum dated 1 November 2004 issued by DPH to Regional Board executive offices recommended that provisions be included in permits to water recycling treatment plants employing UV disinfection requiring Dischargers to establish fixed cleaning frequency if quartz sleeves as well as include provisions

that specify minimum delivered UV dose that must be maintained (as recommended by the NWRI/AWWRF UV Disinfection Guidelines).

Turbidity is included as an operational specification as an indicator of the effectiveness of the treatment process and to assure compliance effluent coliform limitations. Failure of the treatment system such that virus removal is impaired would normally result in increased particles in the effluent, which result in higher effluent turbidity and could impact UV dosage. Turbidity has a major advantage for monitoring filter performance, allowing immediate detection of filter failure and rapid corrective action. The operational specification requires that turbidity prior to disinfection shall not exceed 2 NTU as a daily average; 5 NTU, more than 5% of the time within a 24-hour period, and an instantaneous maximum of 10 NTU.

Minimum UV dosage and turbidity specifications are included as operating criteria in Special Provisions Section VI.C.4 and Monitoring Requirements, Attachment E Section IX.C to ensure that adequate disinfection of wastewater is achieved.

5. Special Provisions for Municipal Facilities (POTWs Only)

- a. **Biosolids.** The use and disposal of biosolids is regulated under federal and state laws and regulations, including permitting requirements and technical standards included in 40 CFR Part 503. The Discharger is required to comply with the standards and time schedules contained in 40 CFR Part 503.

Title 27, CCR, Division 2, Subdivision 1, section 20005 establishes approved methods for the disposal of collected screenings, residual sludge, biosolids, and other solids removed from liquid wastes. This Order includes requirements to ensure the Discharger disposes of solids in compliance with state and federal regulations.

- b. **Collection System.** On 2 May 2006, the State Water Board adopted State Water Board Order No. 2006-0003, a Statewide General WDR for Sanitary Sewer Systems. The Discharger shall be subject to the requirements of Order No. 2006-0003 and any future revisions thereto. Order No. 2006-0003 requires that all public agencies that currently own or operate sewer systems apply for coverage under the General WDR.

Regardless of the coverage obtained under order No. 2006-0003, the Discharger's collection system is part of the treatment system that is subject to the Order. As such, pursuant to federal regulations, the Discharger must properly operate and maintain its collection system [40 CFR section 122.41 (e)], report any non-compliance [40 CFR section 122.41(l)(6) and (7)], and mitigate any discharge from the collection system in violation of this Order [40 CFR section 122.41(d)].

6. Other Special Provisions

- a. Pursuant to DPH reclamation criteria, Title 22 CCR, Division 4, Chapter 3, (Title 22), wastewater discharged to Putah Creek must be oxidized, coagulated, filtered, and adequately disinfected; or equivalent. Special provision VI.C.6.a requires that effluent discharges to Putah Creek meet the requirements of Title 22, or equivalent, for the protection of the REC-1 and REC-2 beneficial uses.
- b. Sections 122.41(l)(3) and 122.61 of the Code of Federal Regulations establish requirements for the transfer of an NPDES permit. Special Provision VI.C.6.b of this Order requires the Discharger to comply with federal regulations for the transfer of NPDES permits in the event of a change of ownership.

7. Compliance Schedules – Not Applicable

VIII. PUBLIC PARTICIPATION

The California Regional Water Quality Control Board, Central Valley Region (Regional Water Board) is considering the issuance of waste discharge requirements (WDRs) that will serve as a National Pollutant Discharge Elimination System (NPDES) permit for University of California Davis Main Wastewater Treatment Plant. As a step in the WDR adoption process, the Regional Water Board staff has developed tentative WDRs. The Regional Water Board encourages public participation in the WDR adoption process.

A. Notification of Interested Parties

The Regional Water Board has notified the Discharger and interested agencies and persons of its intent to prescribe waste discharge requirements for the discharge and has provided them with an opportunity to submit their written comments and recommendations. Notification was provided through the following direct mailing to agencies and known interested parties, posting of NOPH at the Discharger's offices and the local post office and publication in the local paper.

B. Written Comments

The staff determinations are tentative. Interested persons are invited to submit written comments concerning these tentative WDRs. Comments must be submitted either in person or by mail to the Executive Office at the Regional Water Board at the address above on the cover page of this Order.

To be fully responded to by staff and considered by the Regional Water Board, written comments should be received at the Regional Water Board offices by 5:00 p.m. on 27 October 2008.

C. Public Hearing

The Regional Water Board will hold a public hearing on the tentative WDRs during its regular Board meeting on the following date and time and at the following location:

Date: 4/5 December 2008
Time: 8:30 am
Location: Regional Water Quality Control Board, Central Valley Region
11020 Sun Center Dr., Suite #200
Rancho Cordova, CA 95670

Interested persons are invited to attend. At the public hearing, the Regional Water Board will hear testimony, if any, pertinent to the discharge, WDRs, and permit. Oral testimony will be heard; however, for accuracy of the record, important testimony should be in writing.

Please be aware that dates and venues may change. Our Web address is <http://www.waterboards.ca.gov/rwqcb5/> where you can access the current agenda for changes in dates and locations.

D. Waste Discharge Requirements Petitions

Any aggrieved person may petition the State Water Resources Control Board to review the decision of the Regional Water Board regarding the final WDRs. The petition must be submitted within 30 days of the Regional Water Board's action to the following address:

State Water Resources Control Board
Office of Chief Counsel
P.O. Box 100, 1001 I Street
Sacramento, CA 95812-0100

E. Information and Copying

The Report of Waste Discharge (RWD), related documents, tentative effluent limitations and special provisions, comments received, and other information are on file and may be inspected at the address above at any time between 8:30 a.m. and 4:45 p.m., Monday through Friday. Copying of documents may be arranged through the Regional Water Board by calling 916-464-4828.

F. Register of Interested Persons

Any person interested in being placed on the mailing list for information regarding the WDRs and NPDES permit should contact the Regional Water Board, reference this facility, and provide a name, address, and phone number.

G. Additional Information

Requests for additional information or questions regarding this order should be directed to Elizabeth Lee at 916-464-4787 or Joshua Palmer at 916-464-4674.

Attachment G – Reasonable Potential Analysis

Constituent	Units	MEC	B	C	CMC	CCC	Water & Org.	Org. Only	Basin Plan	MCL	Reasonable Potential
Aluminum	µg/L	251.80	526	200	750 ⁽¹⁾	87 ⁽²⁾	-	-	-	-	Yes
Ammonia (as N)	mg/L	2.57	0.10	0.62	2.14 ⁽¹⁾	0.62 ⁽³⁾	30	-	-	-	Yes
Chloride	mg/L	195	35	106	860 ⁽¹⁾	230 ⁽²⁾	-	-	-	106	Yes
Cyanide	µg/L	6.10	6.70	5.2	22.0	5.2	700	220,000	-	150	Yes
Iron	µg/L	145.0	988.0	300	-	1,000 ⁽⁴⁾	-	-	-	300	No
Manganese	µg/L	3	83.70	50	-	-	-	100	-	50	No
Nitrate (as N)	mg/L	10.20	22.60	10	-	-	-	-	-	10	Yes
Selenium	µg/L	6.56	0.85	5	20 ⁽⁵⁾	5 ⁽⁶⁾	-	-	-	50	Yes
Specific Conductance (EC)	µmhos/cm	1,679	637	Varies	-	-	-	-	-	Varies	Yes
Total Dissolved Solids (TDS)	mg/L	848	384	450	-	-	-	-	-	500	Yes

General Note: All inorganic concentrations are given as total recoverable.

MEC = Maximum Effluent Concentration

B = Maximum Receiving Water Concentration or lowest detection level, if non-detect

C = Criterion used for Reasonable Potential Analysis

CMC = Criterion Maximum Concentration (CTR or NTR)

CCC = Criterion Continuous Concentration (CTR or NTR)

Water & Org. = Human Health Criterion for Consumption of Water & Organisms (CTR or NTR)

Org. Only = Human Health Criterion for Consumption of Organisms Only (CTR or NTR)

Basin Plan = Numeric Site-Specific Basin Plan Water Quality Objective

MCL = Drinking Water Standards Maximum Contaminant Level

Footnotes:

(1) USEPA National Recommended Ambient Water Quality Criteria, Freshwater Aquatic Life Protection, 1-hour average.

(2) USEPA National Recommended Ambient Water Quality Criteria, Freshwater Aquatic Life Protection, 4-day average.

(3) USEPA National Recommended Ambient Water Quality Criteria, Freshwater Aquatic Life Protection, 30-day average.

(4) USEPA National Recommended Ambient Water Quality Criteria, Freshwater Aquatic Life Protection, instantaneous maximum.

(5) California Toxics Rule, Inland Surface Waters, Protection of Freshwater Aquatic Life, 1-hour average.

(6) California Toxics Rule, Inland Surface Waters, Protection of Freshwater Aquatic Life, 30-day average.

Attachment H - Constituents to be monitored

			Controlling Water Quality Criterion for Surface Waters			
CTR #	Constituent	CAS Number	Basis	Criterion Concentration (ug/L or noted) (1)	Criterion Quantitation Limit (ug/L or noted)	Suggested Test Methods
VOLATILE ORGANICS						
28	1,1-Dichloroethane	75343	Primary MCL	5	0.5	EPA 8260B
30	1,1-Dichloroethene	75354	National Toxics Rule	0.057	0.5	EPA 8260B
41	1,1,1-Trichloroethane	71556	Primary MCL	200	0.5	EPA 8260B
42	1,1,2-Trichloroethane	79005	National Toxics Rule	0.6	0.5	EPA 8260B
37	1,1,2,2-Tetrachloroethane	79345	National Toxics Rule	0.17	0.5	EPA 8260B
75	1,2-Dichlorobenzene	95501	Taste & Odor	10	0.5	EPA 8260B
29	1,2-Dichloroethane	107062	National Toxics Rule	0.38	0.5	EPA 8260B
	cis-1,2-Dichloroethene	156592	Primary MCL	6	0.5	EPA 8260B
31	1,2-Dichloropropane	78875	Calif. Toxics Rule	0.52	0.5	EPA 8260B
101	1,2,4-Trichlorobenzene	120821	Public Health Goal	5	0.5	EPA 8260B
76	1,3-Dichlorobenzene	541731	Taste & Odor	10	0.5	EPA 8260B
32	1,3-Dichloropropene	542756	Primary MCL	0.5	0.5	EPA 8260B
77	1,4-Dichlorobenzene	106467	Primary MCL	5	0.5	EPA 8260B
17	Acrolein	107028	Aquatic Toxicity	21	2	EPA 8260B
18	Acrylonitrile	107131	National Toxics Rule	0.059	2	EPA 8260B
19	Benzene	71432	Primary MCL	1	0.5	EPA 8260B
20	Bromoform	75252	Calif. Toxics Rule	4.3	0.5	EPA 8260B
34	Bromomethane	74839	Calif. Toxics Rule	48	1	EPA 8260B
21	Carbon tetrachloride	56235	National Toxics Rule	0.25	0.5	EPA 8260B
22	Chlorobenzene (mono chlorobenzene)	108907	Taste & Odor	50	0.5	EPA 8260B
24	Chloroethane	75003	Taste & Odor	16	0.5	EPA 8260B
25	2- Chloroethyl vinyl ether	110758	Aquatic Toxicity	122 (3)	1	EPA 8260B
26	Chloroform	67663	OEHHA Cancer Risk	1.1	0.5	EPA 8260B
35	Chloromethane	74873	USEPA Health Advisory	3	0.5	EPA 8260B
23	Dibromochloromethane	124481	Calif. Toxics Rule	0.41	0.5	EPA 8260B
27	Dichlorobromomethane	75274	Calif. Toxics Rule	0.56	0.5	EPA 8260B
36	Dichloromethane	75092	Calif. Toxics Rule	4.7	0.5	EPA 8260B
33	Ethylbenzene	100414	Taste & Odor	29	0.5	EPA 8260B
88	Hexachlorobenzene	118741	Calif. Toxics Rule	0.00075	1	EPA 8260B
89	Hexachlorobutadiene	87683	National Toxics Rule	0.44	1	EPA 8260B
91	Hexachloroethane	67721	National Toxics Rule	1.9	1	EPA 8260B
94	Naphthalene	91203	USEPA IRIS	14	10	EPA 8260B
38	Tetrachloroethene	127184	National Toxics Rule	0.8	0.5	EPA 8260B
39	Toluene	108883	Taste & Odor	42	0.5	EPA 8260B
40	trans-1,2-Dichloroethylene	156605	Primary MCL	10	0.5	EPA 8260B
43	Trichloroethene	79016	National Toxics Rule	2.7	0.5	EPA 8260B
44	Vinyl chloride	75014	Primary MCL	0.5	0.5	EPA 8260B
	Methyl-tert-butyl ether (MTBE)	1634044	Secondary MCL	5	0.5	EPA 8260B
	Trichlorofluoromethane	75694	Primary MCL	150	5	EPA 8260B
	1,1,2-Trichloro-1,2,2-Trifluoroethane	76131	Primary MCL	1200	10	EPA 8260B
	Styrene	100425	Taste & Odor	11	0.5	EPA 8260B
	Xylenes	1330207	Taste & Odor	17	0.5	EPA 8260B

SEMI-VOLATILE ORGANICS						
60	1,2-Benzanthracene	56553	Calif. Toxics Rule	0.0044	5	EPA 8270C
85	1,2-Diphenylhydrazine	122667	National Toxics Rule	0.04	1	EPA 8270C
45	2-Chlorophenol	95578	Taste and Odor	0.1	2	EPA 8270C
46	2,4-Dichlorophenol	120832	Taste and Odor	0.3	1	EPA 8270C
47	2,4-Dimethylphenol	105679	Calif. Toxics Rule	540	2	EPA 8270C
49	2,4-Dinitrophenol	51285	National Toxics Rule	70	5	EPA 8270C
82	2,4-Dinitrotoluene	121142	National Toxics Rule	0.11	5	EPA 8270C
55	2,4,6-Trichlorophenol	88062	Taste and Odor	2	10	EPA 8270C
83	2,6-Dinitrotoluene	606202	USEPA IRIS	0.05	5	EPA 8270C
50	2-Nitrophenol	25154557	Aquatic Toxicity	150 (5)	10	EPA 8270C
71	2-Chloronaphthalene	91587	Aquatic Toxicity	1600 (6)	10	EPA 8270C
78	3,3'-Dichlorobenzidine	91941	National Toxics Rule	0.04	5	EPA 8270C
62	3,4-Benzofluoranthene	205992	Calif. Toxics Rule	0.0044	10	EPA 8270C
52	4-Chloro-3-methylphenol	59507	Aquatic Toxicity	30	5	EPA 8270C
48	4,6-Dinitro-2-methylphenol	534521	National Toxics Rule	13.4	10	EPA 8270C
51	4-Nitrophenol	100027	USEPA Health Advisory	60	5	EPA 8270C
69	4-Bromophenyl phenyl ether	101553	Aquatic Toxicity	122	10	EPA 8270C
72	4-Chlorophenyl phenyl ether	7005723	Aquatic Toxicity	122 (3)	5	EPA 8270C
56	Acenaphthene	83329	Taste and Odor	20	1	EPA 8270C
57	Acenaphthylene	208968	No Criteria Available		10	EPA 8270C
58	Anthracene	120127	Calif. Toxics Rule	9,600	10	EPA 8270C
59	Benzidine	92875	National Toxics Rule	0.00012	5	EPA 8270C
61	Benzo(a)pyrene (3,4-Benzopyrene)	50328	Calif. Toxics Rule	0.0044	0.1	EPA 8270C
63	Benzo(g,h,i)perylene	191242	No Criteria Available		5	EPA 8270C
64	Benzo(k)fluoranthene	207089	Calif. Toxics Rule	0.0044	2	EPA 8270C
65	Bis(2-chloroethoxy) methane	111911	No Criteria Available		5	EPA 8270C
66	Bis(2-chloroethyl) ether	111444	National Toxics Rule	0.031	1	EPA 8270C
67	Bis(2-chloroisopropyl) ether	39638329	Aquatic Toxicity	122 (3)	10	EPA 8270C
68	Bis(2-ethylhexyl) phthalate	117817	National Toxics Rule	1.8	3	EPA 8270C
70	Butyl benzyl phthalate	85687	Aquatic Toxicity	3 (7)	10	EPA 8270C
73	Chrysene	218019	Calif. Toxics Rule	0.0044	5	EPA 8270C
81	Di-n-butylphthalate	84742	Aquatic Toxicity	3 (7)	10	EPA 8270C
84	Di-n-octylphthalate	117840	Aquatic Toxicity	3 (7)	10	EPA 8270C
74	Dibenzo(a,h)-anthracene	53703	Calif. Toxics Rule	0.0044	0.1	EPA 8270C
79	Diethyl phthalate	84662	Aquatic Toxicity	3 (7)	2	EPA 8270C
80	Dimethyl phthalate	131113	Aquatic Toxicity	3 (7)	2	EPA 8270C
86	Fluoranthene	206440	Calif. Toxics Rule	300	10	EPA 8270C
87	Fluorene	86737	Calif. Toxics Rule	1300	10	EPA 8270C
90	Hexachlorocyclopentadiene	77474	Taste and Odor	1	1	EPA 8270C
92	Indeno(1,2,3-c,d)pyrene	193395	Calif. Toxics Rule	0.0044	0.05	EPA 8270C
93	Isophorone	78591	National Toxics Rule	8.4	1	EPA 8270C
98	N-Nitrosodiphenylamine	86306	National Toxics Rule	5	1	EPA 8270C
96	N-Nitrosodimethylamine	62759	National Toxics Rule	0.00069	5	EPA 8270C
97	N-Nitrosodi-n-propylamine	621647	Calif. Toxics Rule	0.005	5	EPA 8270C
95	Nitrobenzene	98953	National Toxics Rule	17	10	EPA 8270C
53	Pentachlorophenol	87865	Calif. Toxics Rule	0.28	0.2	EPA 8270C
99	Phenanthrene	85018	No Criteria Available		5	EPA 8270C
54	Phenol	108952	Taste and Odor	5	1	EPA 8270C
100	Pyrene	129000	Calif. Toxics Rule	960	10	EPA 8270C

INORGANICS						
	Aluminum	7429905	Ambient Water Quality	87	50	EPA 6020/200.8
1	Antimony	7440360	Primary MCL	6	5	EPA 6020/200.8
2	Arsenic	7440382	Ambient Water Quality	0.018	0.01	EPA 1632
15	Asbestos	1332214	National Toxics Rule/ Primary MCL	7 MFL	0.2 MFL >10um	EPA/600/R-93/116(PCM)
	Barium	7440393	Basin Plan Objective	100	100	EPA 6020/200.8
3	Beryllium	7440417	Primary MCL	4	1	EPA 6020/200.8
4	Cadmium	7440439	Public Health Goal	0.07	0.25	EPA 1638/200.8
5a	Chromium (total)	7440473	Primary MCL	50	2	EPA 6020/200.8
5b	Chromium (VI)	18540299	Public Health Goal	0.2	0.5	EPA 7199/ 1636
6	Copper	7440508	National Toxics Rule	4.1 (2)	0.5	EPA 6020/200.8
14	Cyanide	57125	National Toxics Rule	5.2	5	EPA 9012A
	Fluoride	7782414	Public Health Goal	1000	0.1	EPA 300
	Iron	7439896	Secondary MCL	300	100	EPA 6020/200.8
7	Lead	7439921	Calif. Toxics Rule	0.92 (2)	0.5	EPA 1638
8	Mercury	7439976	TMDL Development		0.0002 (11)	EPA 1669/1631
	Manganese	7439965	Secondary MCL/ Basin Plan Objective	50	20	EPA 6020/200.8
9	Nickel	7440020	Calif. Toxics Rule	24 (2)	5	EPA 6020/200.8
10	Selenium	7782492	Calif. Toxics Rule	5 (8)	5	EPA 6020/200.8
11	Silver	7440224	Calif. Toxics Rule	0.71 (2)	1	EPA 6020/200.8
12	Thallium	7440280	National Toxics Rule	1.7	1	EPA 6020/200.8
	Tributyltin	688733	Ambient Water Quality	0.063	0.002	EV-024/025
13	Zinc	7440666	Calif. Toxics Rule/ Basin Plan Objective	54/ 16 (2)	10	EPA 6020/200.8
PESTICIDES - PCBs						
110	4,4'-DDD	72548	Calif. Toxics Rule	0.00083	0.02	EPA 8081A
109	4,4'-DDE	72559	Calif. Toxics Rule	0.00059	0.01	EPA 8081A
108	4,4'-DDT	50293	Calif. Toxics Rule	0.00059	0.01	EPA 8081A
112	alpha-Endosulfan	959988	National Toxics Rule	0.056 (9)	0.02	EPA 8081A
103	alpha-Hexachlorocyclohexane (BHC)	319846	Calif. Toxics Rule	0.0039	0.01	EPA 8081A
	Alachlor	15972608	Primary MCL	2	1	EPA 8081A
102	Aldrin	309002	Calif. Toxics Rule	0.00013	0.005	EPA 8081A
113	beta-Endosulfan	33213659	Calif. Toxics Rule	0.056 (9)	0.01	EPA 8081A
104	beta-Hexachlorocyclohexane	319857	Calif. Toxics Rule	0.014	0.005	EPA 8081A
107	Chlordane	57749	Calif. Toxics Rule	0.00057	0.1	EPA 8081A
106	delta-Hexachlorocyclohexane	319868	No Criteria Available		0.005	EPA 8081A
111	Dieldrin	60571	Calif. Toxics Rule	0.00014	0.01	EPA 8081A
114	Endosulfan sulfate	1031078	Ambient Water Quality	0.056	0.05	EPA 8081A
115	Endrin	72208	Calif. Toxics Rule	0.036	0.01	EPA 8081A
116	Endrin Aldehyde	7421934	Calif. Toxics Rule	0.76	0.01	EPA 8081A
117	Heptachlor	76448	Calif. Toxics Rule	0.00021	0.01	EPA 8081A
118	Heptachlor Epoxide	1024573	Calif. Toxics Rule	0.0001	0.01	EPA 8081A
105	Lindane (gamma-Hexachlorocyclohexane)	58899	Calif. Toxics Rule	0.019	0.019	EPA 8081A
119	PCB-1016	12674112	Calif. Toxics Rule	0.00017 (10)	0.5	EPA 8082
120	PCB-1221	11104282	Calif. Toxics Rule	0.00017 (10)	0.5	EPA 8082

121	PCB-1232	11141165	Calif. Toxics Rule	0.00017 (10)	0.5	EPA 8082
122	PCB-1242	53469219	Calif. Toxics Rule	0.00017 (10)	0.5	EPA 8082
123	PCB-1248	12672296	Calif. Toxics Rule	0.00017 (10)	0.5	EPA 8082
124	PCB-1254	11097691	Calif. Toxics Rule	0.00017 (10)	0.5	EPA 8082
125	PCB-1260	11096825	Calif. Toxics Rule	0.00017 (10)	0.5	EPA 8082
126	Toxaphene	8001352	Calif. Toxics Rule	0.0002	0.5	EPA 8081A
	Atrazine	1912249	Public Health Goal	0.15	1	EPA 8141A
	Bentazon	25057890	Primary MCL	18	2	EPA 643/ 515.2
	Carbofuran	1563662	CDFG Hazard Assess.	0.5	5	EPA 8318
	2,4-D	94757	Primary MCL	70	10	EPA 8151A
	Dalapon	75990	Ambient Water Quality	110	10	EPA 8151A
	1,2-Dibromo-3-chloropropane (DBCP)	96128	Public Health Goal	0.0017	0.01	EPA 8260B
	Di(2-ethylhexyl)adipate	103231	USEPA IRIS	30	5	EPA 8270C
	Dinoseb	88857	Primary MCL	7	2	EPA 8151A
	Diquat	85007	Ambient Water Quality	0.5	4	EPA 8340/ 549.1/HPLC
	Endothal	145733	Primary MCL	100	45	EPA 548.1
	Ethylene Dibromide	106934	OEHHA Cancer Risk	0.0097	0.02	EPA 8260B/ 504
	Glyphosate	1071836	Primary MCL	700	25	HPLC/ EPA 547
	Methoxychlor	72435	Public Health Goal	30	10	EPA 8081A
	Molinate (Ordram)	2212671	CDFG Hazard Assess.	13	2	EPA 634
	Oxamyl	23135220	Public Health Goal	50	20	EPA 8318/ 632
	Picloram	1918021	Primary MCL	500	1	EPA 8151A
	Simazine (Princep)	122349	USEPA IRIS	3.4	1	EPA 8141A
	Thiobencarb	28249776	Basin Plan Objective/ Secondary MCL	1	1	HPLC/ EPA 639
16	2,3,7,8-TCDD (Dioxin)	1746016	Calif. Toxics Rule	1.30E-08	5.00E-06	EPA 8290 (HRGC) MS
	2,4,5-TP (Silvex)	93765	Ambient Water Quality	10	1	EPA 8151A
	Diazinon	333415	CDFG Hazard Assess.	0.05	0.25	EPA 8141A/ GCMS
	Chlorpyrifos	2921882	CDFG Hazard Assess.	0.014	1	EPA 8141A/ GCMS

OTHER CONSTITUENTS					
Ammonia (as N)	7664417	Ambient Water Quality	1500 (4)		EPA 350.1
Chloride	16887006	Agricultural Use	106,000		EPA 300.0
Flow			1 CFS		
Hardness (as CaCO ₃)			5000		EPA 130.2
Foaming Agents (MBAS)		Secondary MCL	500		SM5540C
Nitrate (as N)	14797558	Primary MCL	10,000	2,000	EPA 300.0
Nitrite (as N)	14797650	Primary MCL	1000	400	EPA 300.0
pH		Basin Plan Objective	6.5-8.5	0.1	EPA 150.1
Phosphorus, Total (as P)	7723140	USEPA IRIS	0.14		EPA 365.3
Specific conductance (EC)		Agricultural Use	700 umhos/cm		EPA 120.1
Sulfate		Secondary MCL	250,000	500	EPA 300.0
Sulfide (as S)		Taste and Odor	0.029		EPA 376.2
Sulfite (as SO ₃)		No Criteria Available			SM4500-SO3
Temperature		Basin Plan Objective	°F		
Total Dissolved Solids (TDS)		Agricultural Use	450,000		EPA 160.1

FOOTNOTES:

(1) - The Criterion Concentrations serve only as a point of reference for the selection of the appropriate analytical method. They do not indicate a regulatory decision that the cited concentration is either necessary or sufficient for full protection of beneficial uses. Available technology may require that effluent limits be set lower than these values.

(2) - Freshwater aquatic life criteria for metals are expressed as a function of total hardness (mg/L) in the water body. Values displayed correspond to a total hardness of 40 mg/L.

(3) - For haloethers

(4) - Freshwater aquatic life criteria for ammonia are expressed as a function of pH and temperature of the water body. Values displayed correspond to pH 8.0 and temperature of 22 C.

(5) - For nitrophenols.

(6) - For chlorinated naphthalenes.

(7) - For phthalate esters.

(8) - Basin Plan objective = 2 ug/L for Salt Slough and specific constructed channels in the Grassland watershed.

(9) - Criteria for sum of alpha- and beta- forms.

(10) - Criteria for sum of all PCBs.

(11) - Mercury monitoring shall utilize "ultra-clean" sampling and analytical methods. These methods include:

Method 1669: Sampling Ambient Water for Trace Metals at EPA Water Quality Criteria Levels, US EPA; and

Method 1631: Mercury in Water by Oxidation, Purge and Trap, and Cold Vapor Atomic Fluorescence, US EPA